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Abstract

A program for approximately 100 2- to 5-year-old culturally deprived Nashville, Tennessee, children was conducted in two community day-care centers. The children received instruction in groups of six or seven on a half-day basis for 5 days a week. Both language input and output were the focus of instruction, which was carried out through face-to-face conversations between the child and teacher, with each child being required to use appropriate sentence structure, verb form, and word endings. Activities included information sharing and talking time, language and sensory-perceptual training units presented in small groups, eurhythmics, and a music and story hour. The sensory-perceptual training emphasized the development of concepts relative to size, color, number, form and position, figure-ground discrimination, and auditory and visual skills. A dramatic increase in IQ level over a 9-month period was noted for the experimental group, but this was not the case for the control subjects. In general, the experimental subjects made greater gains on the sensory-perceptual, linguistic, and readiness measures than did the control group. Tables and references are included. (CM)

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Research Findings from a Language and Sensory-Perceptual Training Program

Freeman McConnell

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Cultural deprivation in early childhood exerts a number of serious effects on a child's overall development, by no means the least of which is lowered intellectual performance. To enumerate several environmental factors which may be expected to impair the normal development of the deprived child, one calls to mind substandard living conditions in which large numbers of siblings and other family members are crowded together, economic instability and umemployment, broken homes, frequent absences of the father, and inadequate diet and medical attention. Verbal communication in these homes is often minimal and either grammatically incorrect or limited in the number of grammatical forms utilized. Children are not encouraged to express themselves, and conversation is used more to control behavior than to exchange information and ideas.

McCandless (1952, p. 678) reported research on intelligence testing showing that upper socio-economic status is associated with higher verbal and lower performance scores, while lower socio-economic status is associated with lower verbal and relatively higher performance scores. Upper and middle class children learn that verbality as a means of adjustment is superior to performance

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methods. On the other hand, the lower the socio-economic status of the family, the more likely that life problems cannot be handled verbally.

The greatest single factor contributing to this lower performance of the deprived child appears to be the direct result of a language deficit. It is the development of language which enables the child to assimilate information and to integrate it with other sensory and motor experiences, thus deriving a meaningful code by which he learns to manipulate and control his environment. Because language as it is heard and spoken, read and written, is the key to thought, communication and learning, it is thus a primary factor in all intellectual and social development. If the child enters school at six without having attained the language skills commensurate with those of his peers, he will undoubtedly fall behind rapidly in the educational setting.

At the Bill Wilkerson Hearing and Speech Center and Vanderbilt University Medical School, we are in the fourth year of a demonstration project funded by the Office of Education, which reflects the philosophy that the disadvantaged child does need instruction quite early in life and of a type that differs from the traditional preschool. A major objective is to combat the environmentally induced retardation of such children. We have attempted to meet this objective by providing a daily program of organized, structured, and intensive sensory-perceptual and language training, emphasizing the incorporation of teaching methods found successful for children having organic language deficit. Believing the normal

language development period (2-1/2 to 4-1/2 yr.) is crucial, we have placed major emphasis on instruction in these early preschool years, beginning at two and one-half to three.

METHOD

Daily instruction is provided to approximately 100 children who range in age from 2-1/2 to 5-1/2 years at the beginning of the school year. These children, who constitute the experimental population, are enrolled in two separate community day care centers located in the lowest socio-economic areas of the city of Nashville, where the urban population numbers close to one-half million. A group of 25 children enrolled in another day care center comprises the control group. The children are divided by age into nursery and kindergarten groups, both of which are further subdivided into groups of six and seven each for the instructional program presented five days a week on a half-day basis.

The curriculum aspects of this program include information sharing and talking time in an opening exercise, followed by language and sensory-perceptual training units presented in the small groups, eurhythmics, and a music and story hour. Both input and output of language have been the focus of instruction, carried out by use of direct face-to-face conversation encounters with each child requiring him to respond with appropriate sentence structure, verb form, and word endings.

The sensory-perceptual training emphasizes fullest development of all sensory channels with emphasis on development of concepts relative to size, color, number, form and position, figure-ground discrimination, both auditory and visual, and upon auditory skills such as phonemic discrimination and synthesis.

The music and story hour is a period in which a variety of activities are presented for visual and auditory improvement, including poems, finger plays, songs and dramatizations.

RATIONALE

Proponents of the traditional preschool philosophy contend that a program of this nature is too structured for the child of this age. Our results thus far have convinced us that a sharp departure from the traditional nursery school is needed if the disadvantaged child is to be expected to compete in our society with its middle and upper-middle class values.

In other words, if the environment does not provide the child with information children are expected to have by age six when they enter school, it is not inappropriate to teach them. Imparting information to a three-year old can be done without violating the principles of nursery school pedagogy which have stressed the importance of learning through play. True, more structured situations are required if we are to give each child an opportunity for expanding his language skills which are crucial to his later learning in school.

RESULTS

Data have now been accumulated and analyzed in part on the first three years of the study. While our objective has been from the beginning to improve language functioning, it is not suprising to see that language improvement in turn is reflected in intellectual functioning.

Stanford-Binet I.Q. Test. The first year of instruction for five first-year groups totaling 172 children has resulted in highly significant increases on the Stanford-Binet I.Q. Test - a mean of over 16 points. Figure 1 shows that the 21 South Street children who were in the program for two years (1965-67) maintained this gain through the second year of the program. This finding is quite important, since it has been conjectured that some of these children do not hold the gains achieved in the first year. Apparently, much depends upon continued stimulation of the appropriate nature. It is hoped that these children will, by the time they are six, have held their gain for a sufficiently long period of time to prepare them better for formal school learning tasks and that they will not become heirs to the cumulative deficit that has occurred in the past.

Peabody Picture Vocabulary Test. When intelligence was measured by the PPVT, the gains were not so marked nor were the differences between the groups as great, as may be noted in Figure 2. Since this test is highly specific with respect to vocabulary, it would appear not to be as well suited for assessing

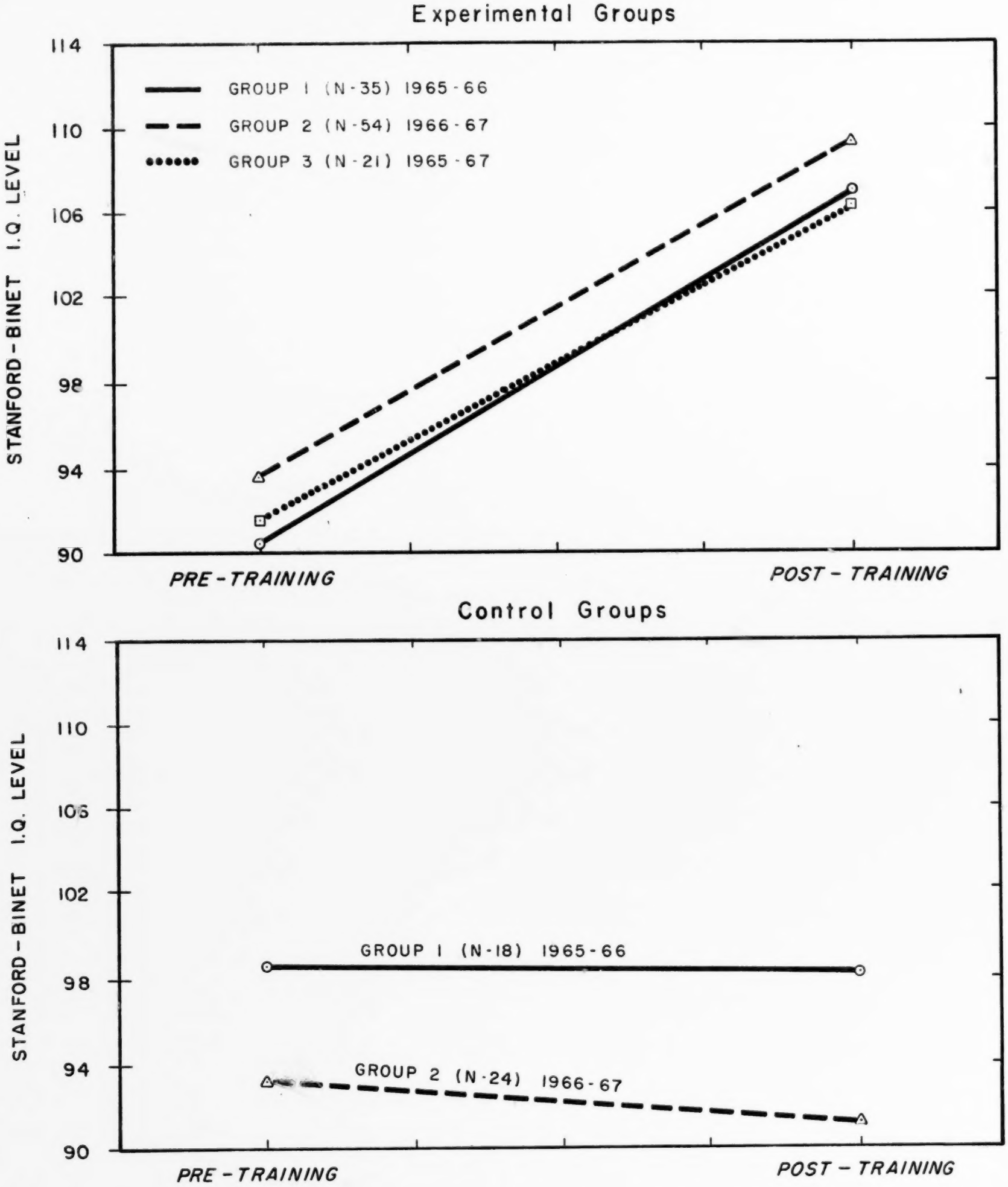


Figure 1. STANFORD-BINET I.Q. LEVELS BEFORE AND AFTER LANGUAGE TRAINING PROGRAM OF THREE EXPERIMENTAL AND TWO CONTROL POPULATIONS.

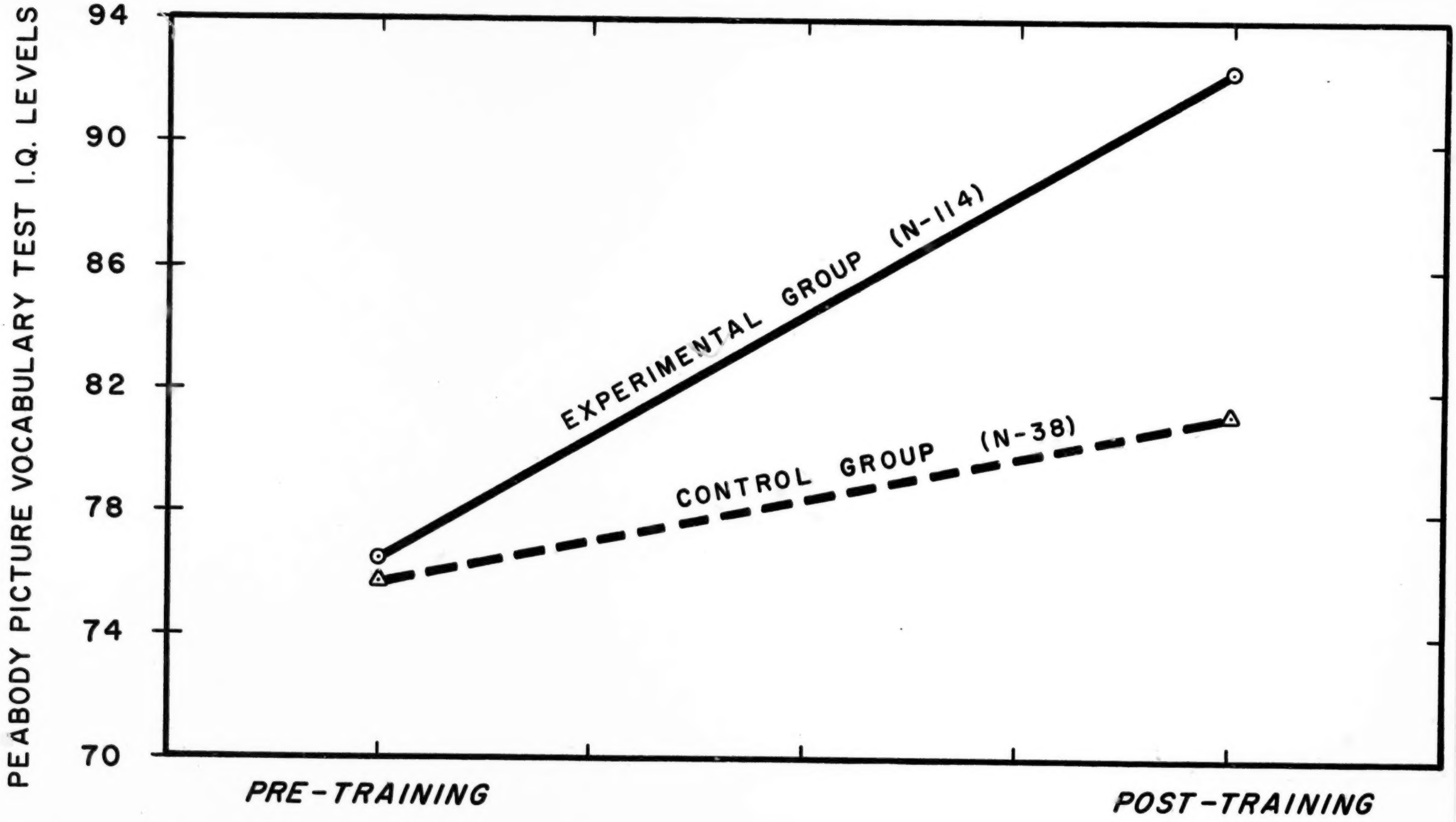
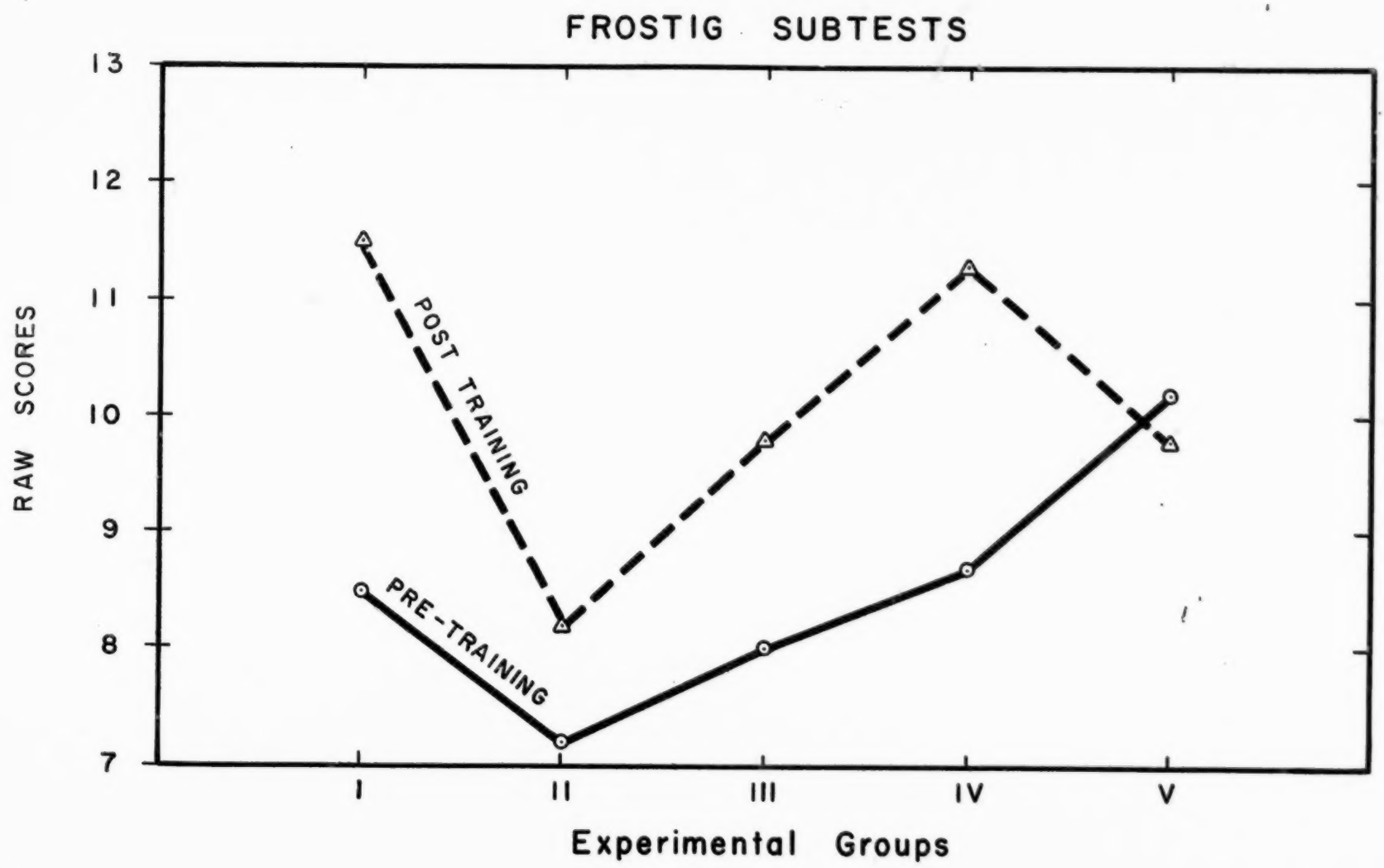


Figure 2. PEABODY PICTURE VOCABULARY TEST I.Q. LEVELS BEFORE AND AFTER ONE YEAR LANGUAGE TRAINING PROGRAM FOR EXPERIMENTAL AND CONTROL POPULATIONS.

the intellectual functioning of children from deprived environments. A total of 114 children with one year of instruction gained in I.Q. by a mean of 15.9, which was about equivalent to the gain on the Binet test, but the gain on the PPVT still left these children at a lower I.Q. level (by about 15 points) than was achieved on the Binet test. The traditional day care program apparently exerted a favorable influence on PPVT level, since the control group did gain by six points (from 75 to 81), although this amount of gain is much less than that shown by the experimental group.

Gains in Sensory-Perceptual and Linguistic Skills

Frostig Developmental Test of Visual Perception. The Frostig Test assesses visual perceptual abilities suggested by Frostig to have the greatest relevance to academic development. Its five subtests are labeled Eye-Hand Coordination, Figure-Ground Discrimination, Form Constancy, Position in Space, and Spatial Relations. Figure 3 illustrates the gains on each of the five subtests of the Frostig Test for the two groups during the first year experimental period. The experimental group made statistically significant gains on four of the five subtests, while the control group gained significantly on only one, progressed minimally and not significantly on two, and regressed on the remaining two. The best indication of the significance of the gains achieved by the experimental group is in a comparison of the Perceptual Quotient scores for the two groups. The



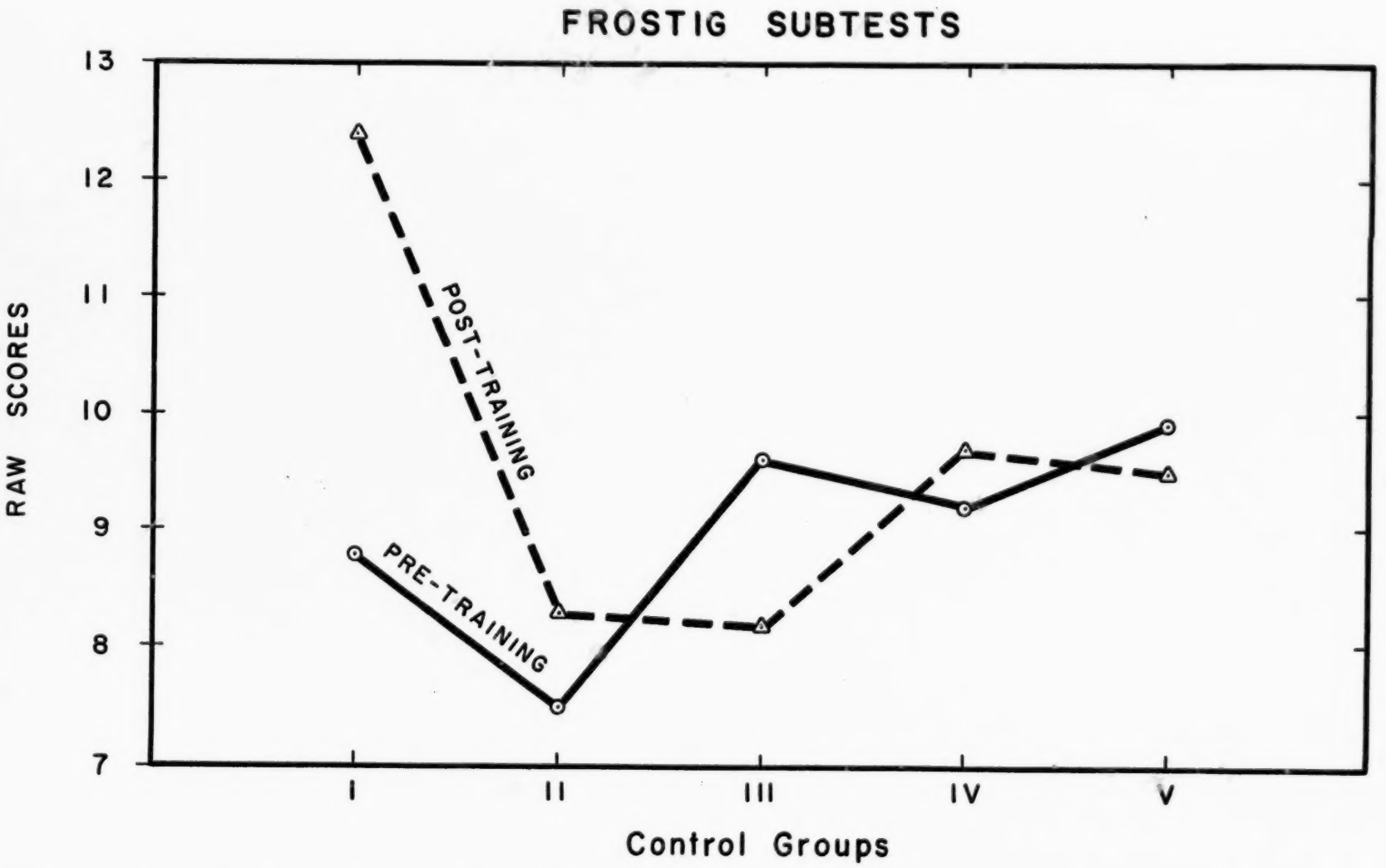


Figure **3** COMPARISON OF PRE-AND POST-TRAINING FROSTIG SUBTEST MEAN SCORES FOR THE EXPERIMENTAL AND CONTROL GROUPS.

experimental subjects gained 19.1 points in their pre- to post-training I.Q. scores, while the control group gained only 6.6 points, an amount one-third that evidenced by the children undergoing specific sensory-perceptual training (Brooks, 1968).

Illinois Test of Psycholinguistic Abilities. Administration of the Illinois Test of Psycholinguistic Abilities before and after training was of particular relevance, inasmuch as this test purports to measure specific linguistic skills towards the improvement of which this project was aimed. Figures 4 and 5, which graph the mean ITPA subtest gains before and after the experimental period, clearly demonstrate that the experimental group moved rapidly ahead to a much greater extent than would be anticipated from the normal growth in the time lapse of nine months between tests. In other words, they would be expected to gain in Language Age in accordance with their chronological age, but on all subtest the experimental group gained in Language Age more than their Chronological Age shift in the same period. Figure 6 shows the gain in months on the respective subtests by the two groups. There was regression on four of the subtests by the control group in the same period, which might lead one to conjecture that a cumulative deficit in language was beginning to manifest itself even at this very early age. The fact that the control group did excel the experimental group on the Visual Decoding items is possibly a reflection of the fact that the traditional day care center program for these children is highly

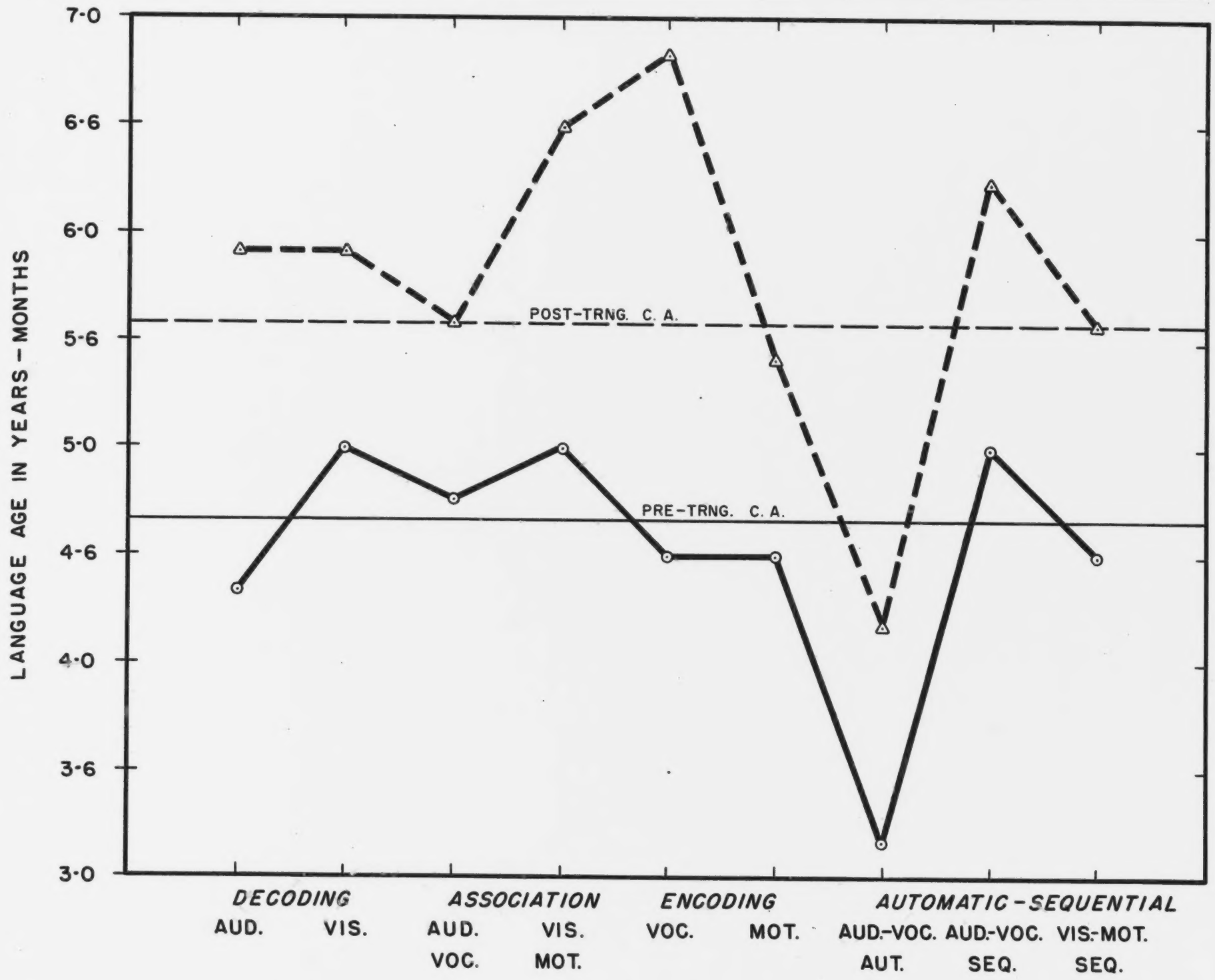


Figure 4. COMPARISON OF ITPA SUBTEST LANGUAGE AGE LEVELS FOR 19 EXPERIMENTAL SUBJECTS BEFORE AND AFTER THE EXPERIMENTAL PERIOD.

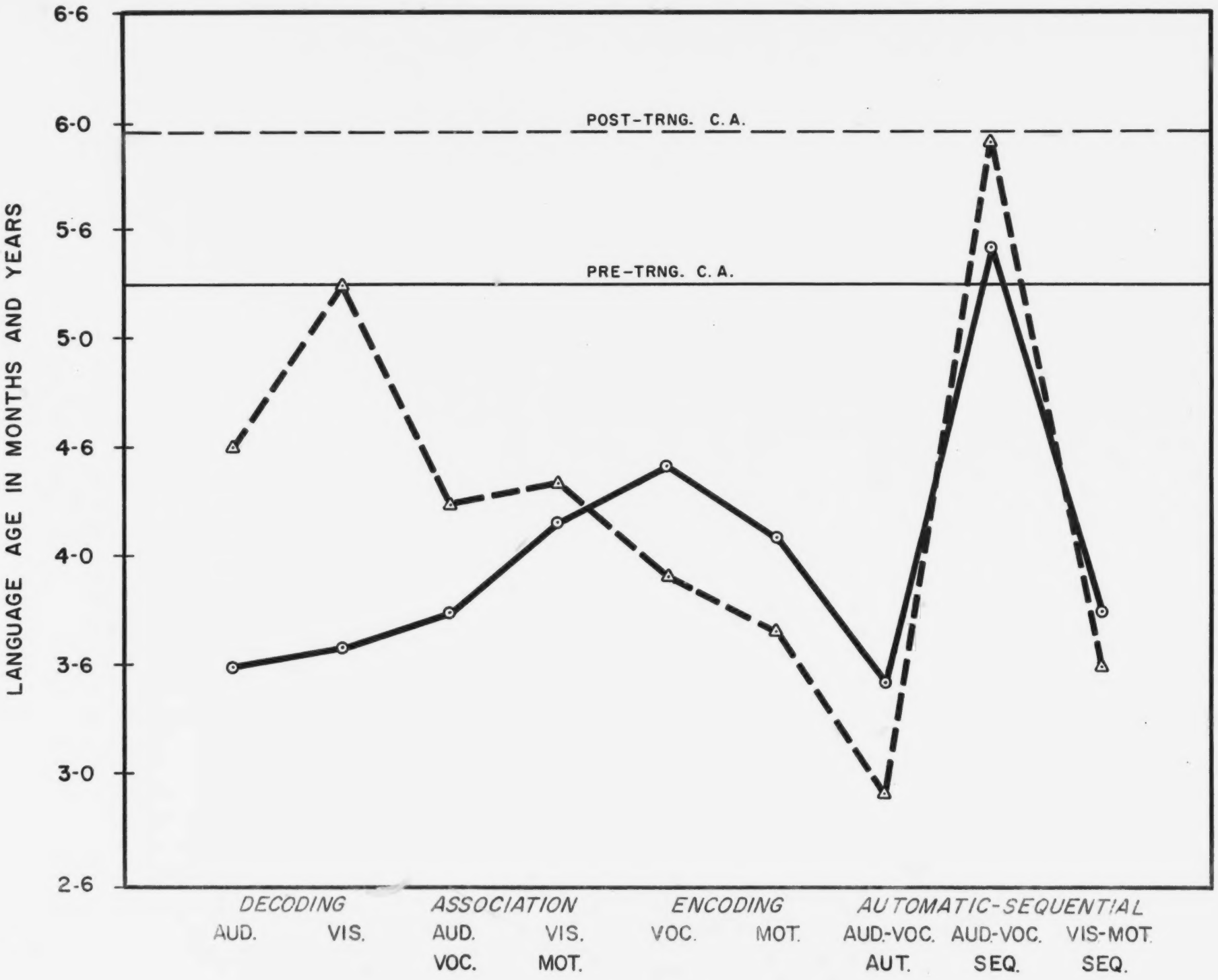


Figure 5. COMPARISON OF ITPA SUBTEST LANGUAGE AGE FOR 22 CONTROL SUBJECTS BEFORE AND AFTER THE EXPERIMENTAL PERIOD.

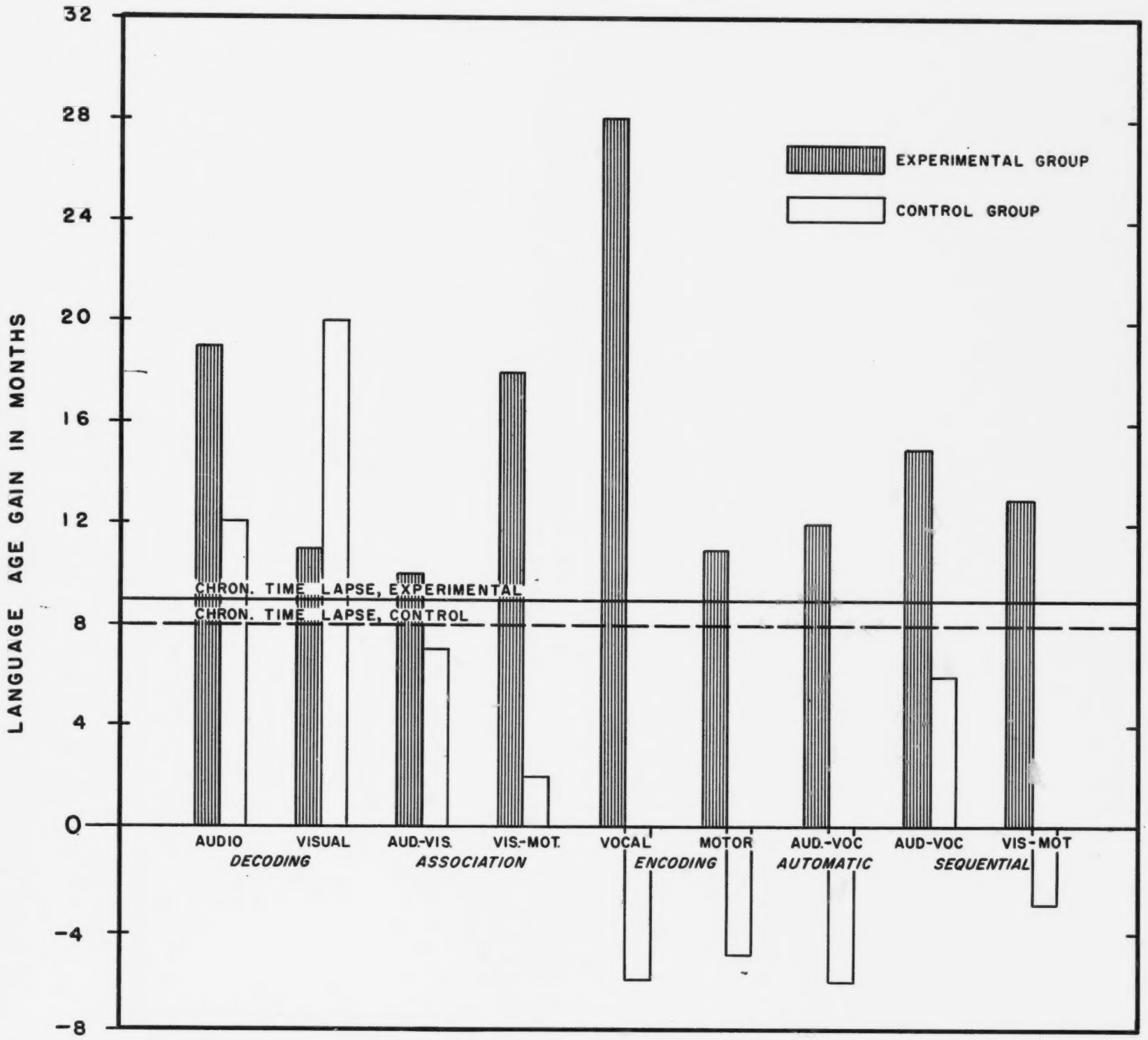


Figure 6: LANGUAGE AGE GAIN IN MONTHS IN I T P A SUBTESTS FOR EXPERIMENTAL AND CONTROL GROUPS

visually oriented, with much less attention given to verbal and auditory skills stressed in the experimental program.

Besides data from our own projects, others have reported the culturally deprived child is more visually oriented toward learning than auditorially, which fact poses the question if auditory comprehension difficulties may be complicated by inadequacy in auditory discrimination and other auditory perceptual skills. The hypothesis is that lack of meaningful auditory experience and the random and undifferentiated barrages of sound in the culturally deprived environment may not only preclude adequate vocabulary and grammatical knowledge, but may also produce secondary consequences of altering, or changing, the development of basic auditory perceptual skills.

In an effort to investigate this question we undertook a study which compares three groups of children on three types of auditory skills. Three particular auditory skills, auditory blending, word memory, and speech sound discrimination, were tested. Thus, these tests required skills of perception, phonemic discrimination, auditory memory, and phonemic synthesis. The experimental group was comprised of culturally disadvantaged Negro children, while two groups of middle class children, one white and one Negro group, were the control groups (15 each). The comparative performance of the three groups on the three tests are shown in Figures 7,8, and 9 (Robertson, 1967).

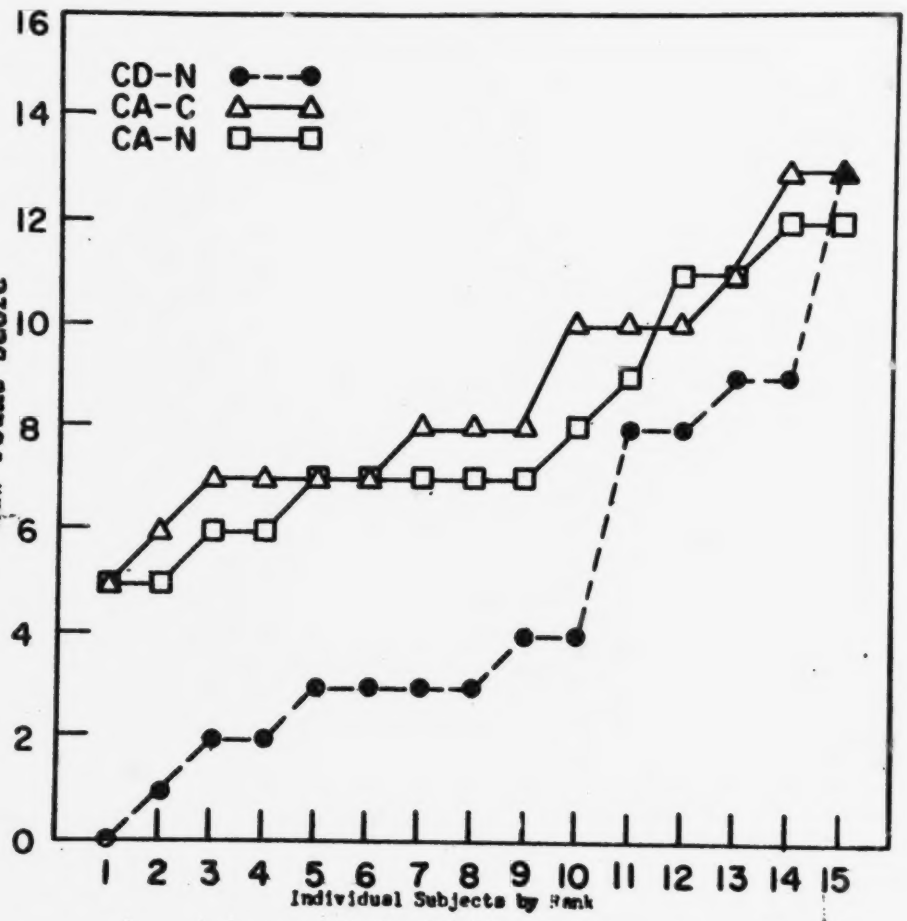


Figure 7. Point scores obtained by each of the individual subjects on the test of Auditory Word Memory and plotted by rank from lowest to highest scores in each group.

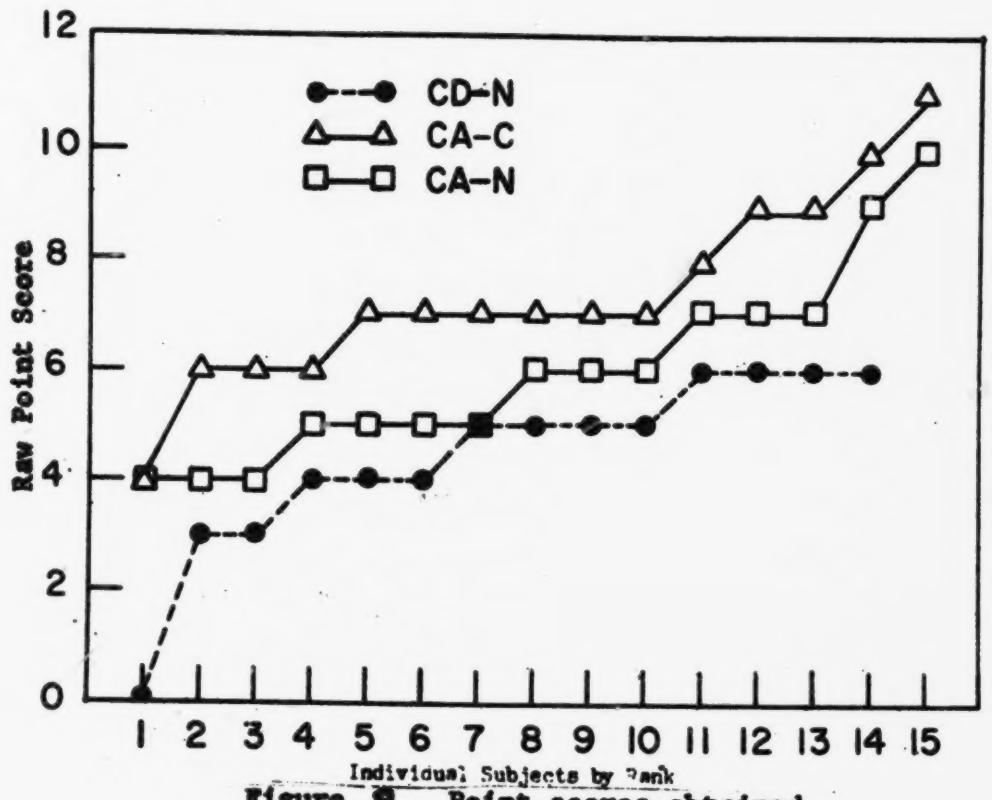


Figure 8. Point scores obtained by each of the individual subjects on the test of Auditory Blending and plotted by rank from lowest to highest scores in each group.

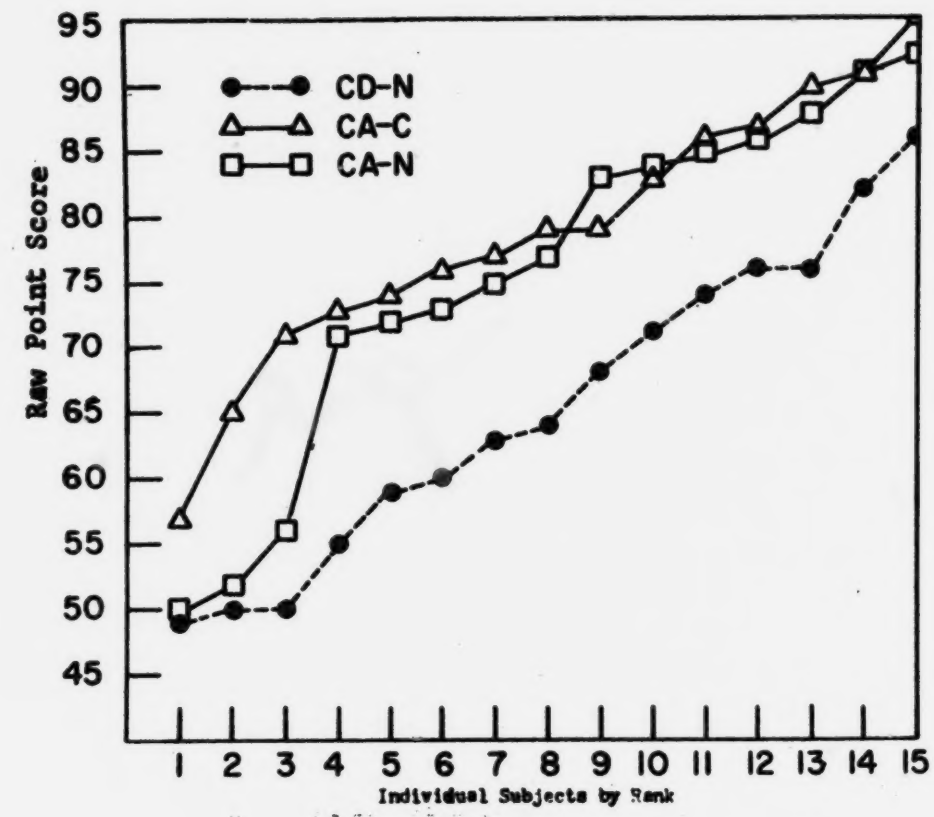


Figure 9. Point scores obtained by each of the individual subjects on the test of Total Speech Sound Discrimination and plotted by rank from lowest to highest scores in each group.

These results suggest that the environmental factor is the major etiologic factor, rather than ethnic or racial, since in only one instance, (auditory blending test) was the difference between the two middle class groups statistically significant. Thus, the inference may be drawn that the auditory listening skills of the culturally deprived child are indeed less adequate when compared to his middle class peers.

Assessment of School Readiness

Metropolitan Readiness Tests. As a final measure, the Metropolitan Readiness Tests were given to all children in both the experimental and control groups who were preparing to enter first grade in public schools in September 1967. This battery of tests is purported to measure "the extent to which school beginners have developed in the several skills and abilities that contribute to readiness for first-grade instruction" (from preface of Manual of Directions). While the numbers in this age group were small (Exper. 16; Control 9), the amounts by which the experimental subjects excelled the control subjects, on the average, is clearly evident in Figure 10.

It is our opinion that these data indicate the instruction program which was presented to our experimental subjects may have raised their readiness level by at least one score range.

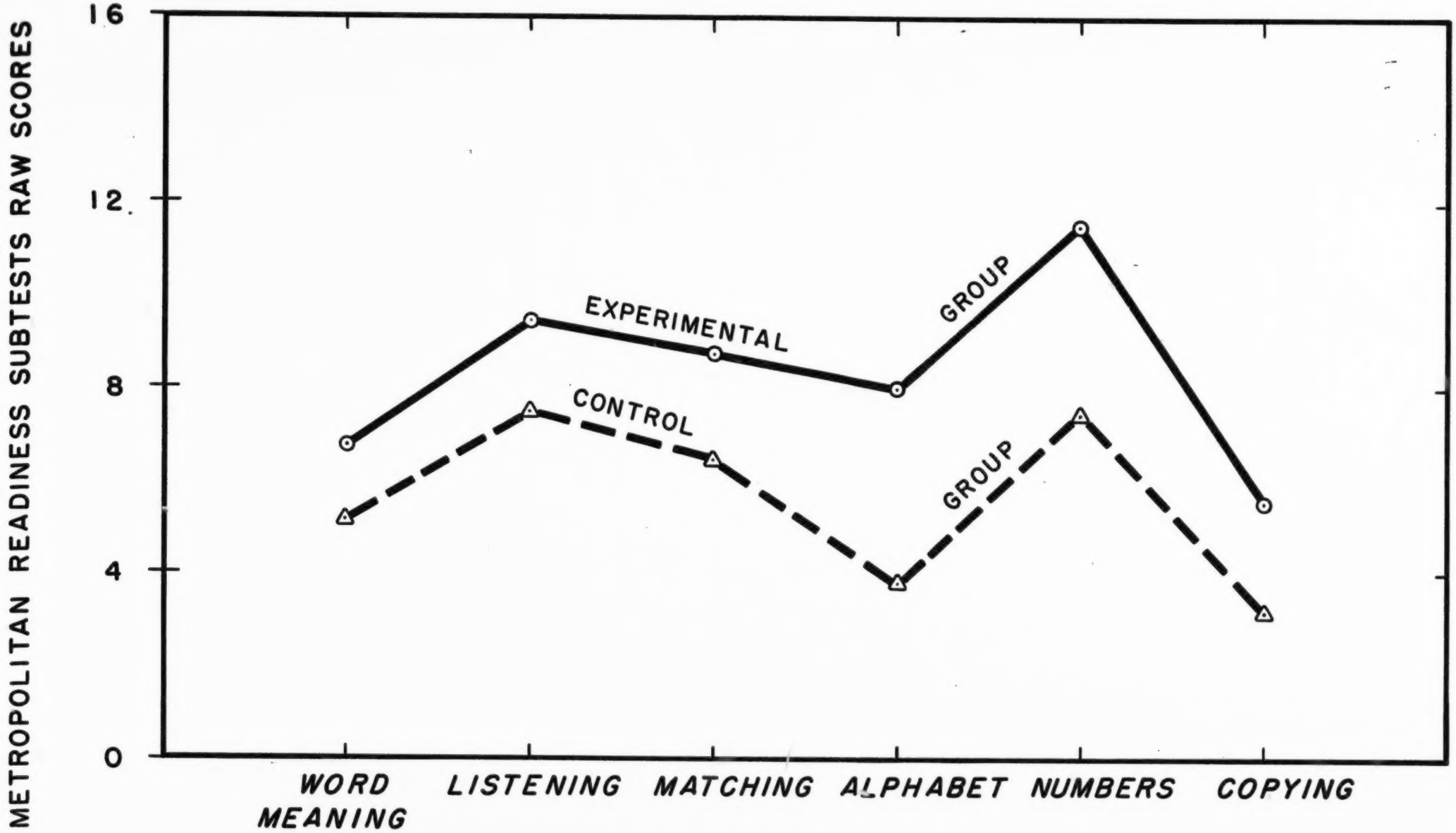


Figure 10. COMPARATIVE ACHIEVEMENT OF FIVE TO SIX YEAR OLDS IN EXPERIMENTAL AND CONTROL GROUPS ON SUBTESTS OF METROPOLITAN (SCHOOL) READINESS TESTS AFTER ONE YEAR EXPERIMENTAL PERIOD.

SUMMARY

In summary, we believe that language and sensory-perceptual training programs implemented in the critical preschool years, may be expected to combat in an effective way the sociologically induced mental retardation of such children. Both the receptive and expressive aspects of language functioning need to be stimulated, increased, and improved for them. When one considers that in the traditional nursery program a given child has very little opportunity for direct conversation with the teacher, we can appreciate the need for the small group interaction in which exchange of conversation and individual attention on structure and syntax of language is actually emphasized by direct teaching methods. It has also been noted that the auditory abilities were poorer than visual on several kinds of assessment. Thus, auditory input is apparently deficient compared to visual input. Our task becomes then one of learning to assess and to find ways to improve listening skills for verbal stimuli.

A problem which is yet unsolved is whether the basic auditory perceptual skills learned by most children in the first years of life, if unlearned because of the particular environmental milieu, as in cultural deprivation, would directly contribute to the child's lack of facility in language and subsequent poor educational achievement. As we continue to study these and the many other different facets which combine to present the problem of sociologically induced mental retardation in our society, hopefully we shall be able to discover ways of effective remediation.

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